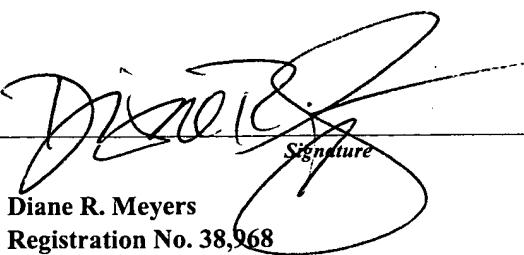
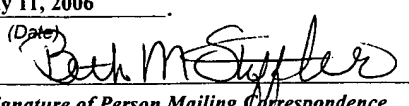
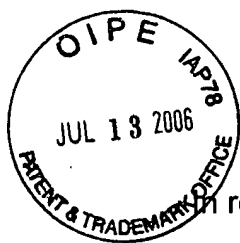
 <b>TRANSMITTAL OF APPEAL BRIEF (Large Entity)</b>					<b>Docket No.</b> 1646A1	
In Re Application Of: <b>JOHN R. SCHNEIDER, et al.</b>						
<b>Application No.</b> 10/007,149	<b>Filing Date</b> December 5, 2001	<b>Examiner</b> Rachel Gorr	<b>Customer No.</b> 24954	<b>Group Art Unit</b> 1711	<b>Confirmation No.</b> 1918	
<b>Invention: COATING COMPOSITIONS PROVIDING IMPROVED MAR AND SCRATCH RESISTANCE AND METHODS OF USING THE SAME</b>						
<p style="text-align: center;"><u>COMMISSIONER FOR PATENTS:</u></p> <p>Transmitted herewith is the Appeal Brief in this application, with respect to the Notice of Appeal filed on:</p> <p>The fee for filing this Appeal Brief is:      <b>\$500.00</b></p> <p><input type="checkbox"/> A check in the amount of the fee is enclosed.</p> <p><input type="checkbox"/> The Director has already been authorized to charge fees in this application to a Deposit Account.</p> <p><input checked="" type="checkbox"/> The Director is hereby authorized to charge any fees which may be required, or credit any overpayment to Deposit Account No. <u>16-2025</u> I have enclosed a duplicate copy of this sheet.</p> <p><input type="checkbox"/> Payment by credit card. Form PTO-2038 is attached.</p> <p><b>WARNING: Information on this form may become public. Credit card information should not be included on this form. Provide credit card information and authorization on PTO-2038.</b></p> <div style="display: flex; justify-content: space-between; align-items: flex-start; margin-top: 20px;"><div style="width: 45%;"><p><b>Diane R. Meyers</b> Registration No. 38,968 Attorney for Applicants Telephone: 412-434-2931 Facsimile: 412-434-4292</p></div><div style="width: 45%; text-align: right;"><p>Dated: July 11, 2006</p><div style="border: 1px solid black; padding: 5px; margin-top: 10px;"><p>I hereby certify that this correspondence is being deposited with the United States Postal Service with sufficient postage as first class mail in an envelope addressed to "Commissioner for Patents, P.O. Box 1450, Alexandria, VA 22313-1450" [37 CFR 1.8(a)] on</p><p style="text-align: center;">July 11, 2006</p><p style="text-align: center;">(Date)</p><p style="text-align: center;">Signature of Person Mailing Correspondence</p><p style="text-align: center;"><b>Beth M. Stiffler</b></p><p style="text-align: center;">Typed or Printed Name of Person Mailing Correspondence</p></div></div></div>						
CC:						



AF  
JFW

IN THE UNITED STATES PATENT AND TRADEMARK OFFICE

In re Application of: : PATENT APPLICATION  
: :  
JOHN R. SCHNEIDER et al. : :  
: : Confirmation No. 1918  
Serial No.: 10/007,149 : :  
: : Attorney Docket No.: 1646A1  
Filed: December 5, 2001 : :  
: : Group Art Unit: 1711  
For: COATING COMPOSITIONS PROVID- : :  
ING IMPROVED MAR AND SCRATCH : Examiner: Rachel Gorr  
RESISTANCE AND METHODS OF : :  
USING THE SAME : :

**BRIEF ON APPEAL**

Mail Stop Appeal Brief - Patents  
Commissioner for Patents  
P. O. Box 1450  
Alexandria, VA 22313-1450

Sir:

This is in support of the Notice of Appeal filed May 11, 2006, appealing the rejection of claims 1, 6, 10-12, 15-17, 19-24, 26-45, and 50-63. The Commissioner is hereby authorized to charge deposit account 16-2025 for any and all fees necessary for filing this brief. The following headings correspond to the requirements of 37 CFR §41.37(c).

07/14/2006 TBESHAH1 00000014 162025 10007149  
01 FC:1402 500.00 DA

**(I) REAL PARTY IN INTEREST**

The real party in interest is PPG Industries Ohio, Inc., having offices at 3800 West 143 Street, Cleveland, Ohio 44111, a wholly-owned subsidiary of PPG Industries, Inc., having offices at One PPG Place, Pittsburgh, Pennsylvania 15272.

**(II) RELATED APPEALS AND INTERFERENCES**

There are no related appeals or interferences known to appellants, the appellants' legal representative, or assignee that will directly affect or be directly affected by or have a bearing on the Board of Appeals ("Board")'s decision in the pending appeal.

**(III) STATUS OF CLAIMS**

Claims 1-13, 15-17, 19-45, and 50-63 are all the claims pending in the application. Claims 2-5, 7-9, 13, and 25 were withdrawn from consideration. Claims 1, 6, 10-12, 15-17, 19-24, 26-40, 42-45, and 50-58 were rejected under 35 U.S.C. 103(a) as being unpatentable over Christie, U.S. Patent No. 6,203,906. Claims 41 and 59-63 were rejected under 35 U.S.C. 103(a) as being unpatentable over Christie in view of Harashima, U. S. Patent No. 6,362,267. Claims 1, 6, 10-12, 15-17, 19-24, 26-45, and 50-63 are on appeal.

**(IV) STATUS OF AMENDMENTS**

A Non-Final Rejection in the above application was mailed February 13, 2006; no amendments were filed thereafter.

**(V) SUMMARY OF CLAIMED SUBJECT MATTER**

The present invention provides (claim 1) a powder coating composition comprising a film-forming resin and a plurality of particles (page 2, lines 23-24) having an average particle size between 1 and 15 microns (page 8, lines 4-7) dispersed in the resin. The particles have a hardness sufficient to impart greater mar and/or scratch resistance to the coating composition as compared to no particle being present (page 2, line 29-page 3, line 2). In addition, the difference between the refractive index of the resin and the refractive index of the particles is less than one so as to minimize haze in the coating (page 12, lines 16-20).

The present invention further provides (claim 41) a method for preparing a powder coating comprising the step of extruding together a film-forming resin and a plurality of particles (page 14, line 21 to page 15, line 2), improving ease of use, processibility, and appearance of the coating (page 15, lines 8-12). The particles have a hardness sufficient to impart greater mar and/or scratch resistance to the coating as compared to no particle being present (page 2, line 29-page 3, line 2), and the difference between the refractive index of the resin and the refractive index of the particles is less than one (page 12, lines 16-20).

The present invention further provides (claim 42) a cured powder coating composition (page 16, lines 6-7) comprising a film-forming resin having a plurality of particles (page 2, lines 23-24) with an average particle size between 1 and 15 microns (page 8, lines 4-7) dispersed in the resin. The particles have a hardness sufficient to impart greater mar and/or scratch resistance to the coating composition as compared to no particle being present (page 2, line 29-page 3, line 2). In addition, the difference between the refractive index of the resin and the refractive index of the particles is less than one so as to minimize haze in the coating (page 12, lines 16-20). The cured powder coating undergoes less than 10 percent gloss reduction after 500 hours of QUV exposure (page 18, lines 8-12).

The present invention further provides (claim 51) a curable powder coating comprising a film-forming resin comprising at least one polymer having at least

one reactive functional group, and at least one curing agent having at least one functional group reactive with the functional group of the polymer (page 3, line 27-page 6, line 2); and alumina particles having an average particle size of less than 3 microns (page 8, lines 4-17) dispersed in the resin in an amount of 0.1 to less than 5 percent by weight (page 11, line 14-page 12, line 8).

The present invention further provides (claim 59) a powder coating composition comprising a film-forming resin and a plurality of particles (page 2, lines 23-24) having an average particle size between 1 and 15 microns (page 8, lines 4-7) dispersed in the resin. The composition is prepared by extruding together the film-forming resin and the particles (page 14, line 21 to page 15, line 2). The particles have a hardness sufficient to impart greater mar and/or scratch resistance as compared to no particle being present (page 2, line 29-page 3, line 2), and the difference between the refractive index of the resin and the refractive index of the particles is less than one (page 12, lines 16-20).

#### **(VI) GROUND OF REJECTION TO BE REVIEWED ON APPEAL**

1. Claims 1, 6, 10-12, 15-17, 19-24, 26-40, 42-45, and 50-58 were rejected under 35 U. S. C. §103(a) as allegedly being obvious over Christie (U. S. 6,203,906).

2. Claims 41 and 59-63 were rejected under 35 U. S. C. §103(a) as allegedly being obvious over Christie (U. S. 6,203,906) in view of Harashima (U. S. 6,362,267).

#### **(VII) ARGUMENT**

1. The rejection of claims 1, 6, 10-12, 15-17, 19-24, 26-40, 42-45, and 50-58 under 35 U. S. C. §103(a) as obvious over Christie (U. S. 6,203,906)

a. Claims 1, 6, 15-17, 19, 20, 22-24, 29-32, 34, 35, 39, 45, 50, 53, 54, 57, and 58

Claims 1, 6, 15-17, 19, 20, 22-24, 29-32, 34, 35, 39, 45, 50, 53, 54, 57, and 58 were rejected under 35 U. S. C. §103(a) as allegedly being obvious over Christie (U. S. 6,203,906). In the Office Action dated September 14, 2005, the Examiner asserts that Christie discloses powder and liquid acrylic coatings comprising 0.05-5 weight percent calcined unground alumina, calcined ground alumina, or tabular alumina, showing a variety of particle diameters as small as 0.5 microns, and a mixture of an acrylic resin and a curing agent. The Examiner notes that the reference differs from the present claims by not specifying that the resin and abrasive filler are similar in refractive index. The Examiner concludes, however, that it would have been obvious to one skilled in the art not to include the soft filler in Christie, who discloses excluding the filler, suggesting that then the abrasive filler would be similar in refractive index and the coating could be used as a clear coat.

Appellants respectfully disagree with the Examiner's rejection and conclusions with respect to claims 1, 6, 15-17, 19, 20, 22-24, 29-32, 34, 35, 39, 45, 50, 53, 54, 57, and 58. Appellants submit that the basis on which the claims were rejected is not a valid rejection under 35 U. S. C. §103(a). Even if one were to consider the teachings of the entire reference, one would not arrive at the present invention as claimed. Christie teaches shaped products and coating films formed from abrasion resistant polymer formulations. The polymer formulations include a polymer such as PVC or a thermosetting polymer, soft filler materials, and 0.05 to 5% of an abrasion resistant additive, which is silicon carbide or an alpha-alumina selected from calcined unground alumina having a median crystallite size of at least 5.5 microns, and calcined and ground alumina having a median particle size of at least 3.0 microns, and tabular alumina. Christie does not teach or suggest a powder composition of the type presently claimed, wherein the difference between the refractive index of the resin and the refractive index of the particles is less than one. In the composition of the present invention, the resin and particles are carefully selected such that the difference in the respective

indices of refraction is minimal; i. e., less than 1. This is in order to minimize haziness of the applied coating, a significant property of such coatings (see page 12, lines 16-20, of the specification). Christie does not recognize the importance or possibility of minimizing haze (maximizing clarity) of a coating composition while also improving the mar resistance thereof. In the Office Action dated February 13, 2006, the Examiner points to Example 2 in Christie for a teaching of a filler having a refractive index of 1.50 to 1.57, alumina having a refractive index of 1.764 as taught by Hoffman (US Patent 3,655,263) and polymethylmethacrylate having a refractive index of 1.48 to 1.50. However, the filler in Example 2 of Christie is a soft filler (aluminum trihydroxide) and is neither intended nor expected to be an abrasion resistant particle; moreover, Example 2 of Christie demonstrates a liquid polymer composition cast into a molded solid article and not a powder coating composition, as recited in the present claims. Despite teachings in Christie of both shaped products and coating films, there is no suggestion in the reference that the liquid, moldable polymer composition in Example 2 would be suitable for use as a powder coating.

There is no appreciation in the reference for the performance and appearance characteristics of the coating compositions presently claimed. Even if one were to remove the soft filler from the composition of Christie, one would not arrive at the powder coating compositions of the present invention. The reference offers no guidance on the selection of resins or particles suitable for use in a powder coating composition, with or without soft fillers, such that the difference in the respective indices of refraction is less than 1. Therefore, one skilled in the art would not assume that the composition of Christie would inherently possess or could be modified to possess the properties of the present invention, as asserted by the Examiner.

Regarding present claims 34 and 35, drawn to a substrate coated with the composition of the present invention, Christie does not teach or suggest the powder coating composition of the present invention for reasons discussed above.

It follows that the reference does not teach or suggest a substrate coated with the composition of the present invention.

Regarding present claim 39, drawn to a method of improving mar resistance of a substrate using the composition of the present invention, again, Christie does not teach or suggest the powder coating composition of the present invention. Therefore, the reference does not teach or suggest a method of improving the mar resistance of a substrate using the composition of the present invention.

**b. Claim 10**

Claim 10 was rejected under 35 U. S. C. §103(a) as allegedly being obvious over Christie, relying on the reference as above.

Appellants respectfully disagree with the Examiner's rejection and conclusions with respect to claim 10. Appellants submit that the basis on which the claim was rejected is not a valid rejection under 35 U. S. C. §103(a). If one were to consider the teachings of the entire reference, one would not arrive at the present invention as recited in claim 10; i.e., a powder coating composition comprising a film-forming resin; and a plurality of uncalcined alumina particles having an average particle size between 1 and 15 microns dispersed in said resin, wherein the particles have a hardness sufficient to impart greater mar and/or scratch resistance as compared to no particle being present, and wherein the difference between the refractive index of the resin and the refractive index of the particles is less than one. In addition to the arguments presented above with respect to claims 1, 6, 15-17, 19, 20, 22-24, 29-32, 34, 35, 39, 45, 50, 53, 54, 57, and 58, Appellants note that Christie discloses only silicon carbide, calcined unground alumina, calcined ground alumina, and tabular alumina as suitable abrasion-resistant additives. There is no teaching or suggestion in the reference to use *uncalcined* alumina. As noted by Christie at column 3, lines 23-28, calcined alumina is formed by heating aluminum trihydroxide to extreme

temperatures to yield a calcined product having an alpha-alumina content of greater than 90 percent. It is typically harder than uncalcined alumina, which contains a substantial amount of aluminum trihydroxide. Note that Christie teaches aluminum trihydroxide as a *soft* filler. It would not have been obvious to one skilled in the art, after a reading of the Christie reference as a whole, to modify the composition of Christie by using uncalcined alumina particles to improve abrasion resistance and arrive at a powder coating composition as recited in claim 10.

**c. Claim 11**

Claim 11 was rejected under 35 U. S. C. §103(a) as allegedly being obvious over Christie, relying on the reference as above.

Appellants respectfully disagree with the Examiner's rejection and conclusions with respect to claim 11. Appellants submit that the basis on which the claim was rejected is not a valid rejection under 35 U. S. C. §103(a). If one were to consider the teachings of the entire reference, one would not arrive at the present invention as recited in claim 11; i. e., a powder coating composition wherein the particles are calcined unground alumina having a median crystallite size less than 5.5 microns. In addition to the arguments presented above with respect to claims 1, 6, 15-17, 19, 20, 22-24, 29-32, 34, 35, 39, 45, 50, 53, 54, 57, and 58, Appellants note that at column 6, line 65 to column 7, line 2, Christie *specifically teaches away* from using calcined unground alumina having a crystallite size less than 5.5 microns. As shown in Fig. 3 and Table 2 of Christie, and as explained at Christie column 6, line 60-column 7, line 2, as the crystallite size of calcined unground alumina increases to more than 5.5 microns, abrasion resistance is markedly improved. Christie goes so far as to say that products with a primary crystallite size above 5.5 microns were able to provide improved abrasion resistance whereas *those with a primary crystallite size below 5.5 microns were not*. Therefore, it would not have been obvious to one skilled in the

art, after a reading of the Christie reference as a whole, to modify the composition of Christie by using calcined unground alumina having a median crystallite size less than 5.5 microns to improve abrasion resistance and arrive at a powder coating composition as recited in claim 11.

**d. Claims 12, 56, and 58**

Claims 12, 56, and 58 were rejected under 35 U. S. C. §103(a) as allegedly being obvious over Christie, relying on the reference as above.

Appellants respectfully disagree with the Examiner's rejection and conclusions with respect to claims 12, 56, and 58. Appellants submit that the basis on which the claims were rejected is not a valid rejection under 35 U. S. C. §103(a). If one were to consider the teachings of the entire reference, one would not arrive at the present invention as recited in claims 12, 56, and 58; i.e., a powder coating composition wherein the particles are calcined ground alumina have a median particle size less than 3 microns. In addition to the arguments presented above with respect to claims 1, 6, 15-17, 19, 20, 22-24, 29-32, 34, 35, 39, 45, 50, 53, 54, 57, and 58, Appellants note that as shown in Fig. 1 of Christie and as explained at Christie column 6, lines 33-42, the median particle size of calcined ground alumina has a distinct effect on the abrasion resistance of the polymer formulation into which it is incorporated. This improvement in abrasion resistance is shown in Fig. 1. In the Office Action dated February 13, 2006, the Examiner asserts that Christie prefers larger particle sizes, but shows smaller particle sizes in Example 2, and "there's little difference between particle sizes less than three microns and equal to three microns." This assertion by the Examiner is inconsistent with and unsupported by the Christie reference. At column 3, lines 51-56, Christie specifically teaches away from the use of calcined ground alumina having particle sizes less than 3 microns. Christie says that calcined alumina particles that grind down to a median particle size less than 3.0 microns are less suitable for use in the Christie invention. Moreover, it is noted in

Christie at column 3, line 66 to column 4, line 5 that the median particle size of the abrasion resistant additives is preferably from 3 or 6 to 250 microns, and that if the median particle size is too small, an improvement in abrasion resistance is not noticed. Therefore, it would not have been obvious to one skilled in the art, after a reading of the Christie reference as a whole, to modify the composition of Christie by using calcined ground alumina having a median particle size less than 3 microns to improve abrasion resistance and arrive at a powder coating composition as recited in claims 12, 56, and 58.

**e. Claims 21, 51, 52, 55, and 57**

Claims 21, 51, 52, 55, and 57 were rejected under 35 U. S. C. §103(a) as allegedly being obvious over Christie, relying on the reference as above.

Appellants respectfully disagree with the Examiner's rejection and conclusions with respect to claims 21, 51, 52, 55, and 57. Appellants submit that the basis on which the claims were rejected is not a valid rejection under 35 U. S. C. §103(a). If one were to consider the teachings of the entire reference, one would not arrive at the present invention as recited in claims 21, 51, 52, 55, and 57; i. e., a powder coating composition wherein the particles have a median particle size less than 3 microns. In addition to the arguments presented above with respect to claims 1, 6, 15-17, 19, 20, 22-24, 29-32, 34, 35, 39, 45, 50, 53, 54, 57, and 58, Appellants note again that it is taught in Christie at column 3, line 66 to column 4, line 5 that the median particle size of the abrasion resistant additives is preferably from 3 or 6 to 250 microns, and that if the median particle size is too small, an improvement in abrasion resistance is not noticed. Therefore, it would not have been obvious to one skilled in the art, after a reading of the Christie reference as a whole, to modify the composition of Christie by using particles having a median particle size less than 3 microns to improve abrasion resistance and arrive at a powder coating composition as recited in claims 21, 51, 52, 55, and 57.

**f. Claims 26-28**

Claims 26-28 were rejected under 35 U. S. C. §103(a) as allegedly being obvious over Christie, relying on the reference as above.

Appellants respectfully disagree with the Examiner's rejection and conclusions with respect to claims 26-28. Appellants submit that the basis on which the claims were rejected is not a valid rejection under 35 U. S. C. §103(a). If one were to consider the teachings of the entire reference, one would not arrive at the present invention as recited in claims 26-28; i. e., a powder coating composition wherein the particles are spherical (claim 26), nonuniform (claim 27), or platy (claim 28). In addition to the arguments presented above with respect to claims 1, 6, 15-17, 19, 20, 22-24, 29-32, 34, 35, 39, 45, 50, 53, 54, 57, and 58, Appellants note that Christie is silent on the shapes of particles that may be used in the polymer formulations disclosed therein. It is indicated in the present specification at page 8, line 23 to page 9, line 6, that particular shapes of particles may be more suitable for one application over another. For example, particles having a platy morphology may be particularly suitable for use in automotive clear coats by offering better mar resistance than other shapes. It would not have been obvious to one skilled in the art, after a reading of the Christie reference as a whole, to modify the composition of Christie by using particles having a specific morphology for any reason and arrive at a powder coating composition as recited in any of claims 26-28.

**g. Claim 33**

Claim 33 was rejected under 35 U. S. C. §103(a) as allegedly being obvious over Christie, relying on the reference as above.

Appellants respectfully disagree with the Examiner's rejection and conclusions with respect to claim 33. Appellants submit that the basis on which the claim was rejected is not a valid rejection under 35 U. S. C. §103(a). If one

were to consider the teachings of the entire reference, one would not arrive at the present invention as recited in claim 33; i. e., a powder coating composition wherein the weight percent of the particles is greater than 5. In addition to the arguments presented above with respect to claims 1, 6, 15-17, 19, 20, 22-24, 29-32, 34, 35, 39, 45, 50, 53, 54, 57, and 58, Appellants note that at column 3, lines 8 to 22, Christie teaches a range of 0.05 to 5% by weight of abrasion resistant particles in the polymer formulations disclosed therein. In lines 16-22, Christie explains in detail that the use of too much abrasive may adversely affect properties or appearance of the product, or may cause difficulty in handling or damage to equipment. Therefore, it would not have been obvious to one skilled in the art, after a reading of the Christie reference as a whole, to modify the composition of Christie by using particles in amounts greater than 5 percent by weight and arrive at a powder coating composition as recited in claim 33.

#### **h. Claim 36**

Claim 36 was rejected under 35 U. S. C. §103(a) as allegedly being obvious over Christie, relying on the reference as above.

Appellants respectfully disagree with the Examiner's rejection and conclusions with respect to claim 36. Appellants submit that the basis on which the claim was rejected is not a valid rejection under 35 U. S. C. §103(a). If one were to consider the teachings of the entire reference, one would not arrive at the present invention as recited in claim 36; i. e., a polymeric substrate coated with the powder coating composition of claim 1. In addition to the arguments presented above with respect to claims 1, 6, 15-17, 19, 20, 22-24, 29-32, 34, 35, 39, 45, 50, 53, 54, 57, and 58, Appellants note that Christie neither teaches nor suggests the use of polymeric substrates for the coatings disclosed therein. Christie only teaches steel substrates as shown in Example 6 of the reference. There is no teaching or suggestion in the reference that polymeric substrates are suitable. Even if one were to use polymeric substrates for the coatings of Christie,

one would not arrive at the present invention for reasons given above. Therefore, it would not have been obvious to one skilled in the art, after a reading of the Christie reference as a whole, to modify the composition of Christie by applying it to a polymeric substrate and arrive at a substrate coated with a powder coating composition as recited in claim 36.

**i. Claims 37 and 40**

Claims 37 and 40 were rejected under 35 U. S. C. §103(a) as allegedly being obvious over Christie, relying on the reference as above.

Appellants respectfully disagree with the Examiner's rejection and conclusions with respect to claims 37 and 40. Appellants submit that the basis on which the claims were rejected is not a valid rejection under 35 U. S. C. §103(a). If one were to consider the teachings of the entire reference, one would not arrive at the present invention as recited in claim 37; i. e., a substrate coated with the powder coating composition of claim 1, wherein one or more additional layers are disposed between the substrate and the coating. In addition to the arguments presented above with respect to claims 1, 6, 15-17, 19, 20, 22-24, 29-32, 34, 35, 39, 45, 50, 53, 54, 57, and 58, Appellants note that Christie neither teaches nor suggests the use of additional layers to be used between the substrate and the coating disclosed therein for any reason.

Regarding present claim 40, drawn to a method of improving mar resistance of a substrate using the coating composition of the present invention wherein an intervening layer is applied to the substrate prior to application of the coating, Christie does not teach or suggest a substrate coated with a powder coating composition and intervening layers as recited in the present claims. Therefore, the reference does not teach or suggest a method of improving the mar resistance of a substrate using the composition of the present invention wherein an intervening layer is applied to the substrate prior to application of the coating.

It would not have been obvious to one skilled in the art, after a reading of the Christie reference as a whole, to modify the composition of Christie by applying it to a substrate with intervening layers and arrive at the present invention as recited in claims 37 and 40.

**j. Claim 38**

Claim 38 was rejected under 35 U. S. C. §103(a) as allegedly being obvious over Christie, relying on the reference as above.

Appellants respectfully disagree with the Examiner's rejection and conclusions with respect to claim 38. Appellants submit that the basis on which the claim was rejected is not a valid rejection under 35 U. S. C. §103(a). If one were to consider the teachings of the entire reference, one would not arrive at the present invention as recited in claim 38; i. e., a substrate coated with the powder coating composition of claim 1, wherein the coating is between 0.1 and 10 mils thick. In addition to the arguments presented above with respect to claims 1, 6, 15-17, 19, 20, 22-24, 29-32, 34, 35, 39, 45, 50, 53, 54, 57, and 58, Appellants note that Christie is silent on the thickness of coatings formed using the polymer formulations disclosed therein. It would not have been obvious to one skilled in the art, after a reading of the Christie reference as a whole, to apply the polymer formulation of Christie in any specific thickness for any reason and arrive at a coated substrate as recited in claim 38.

**k. Claims 42-44**

Claims 42-44 were rejected under 35 U. S. C. §103(a) as allegedly being obvious over Christie, relying on the reference as above.

Appellants respectfully disagree with the Examiner's rejection and conclusions with respect to claims 42-44. Appellants submit that the basis on which the claims were rejected is not a valid rejection under 35 U. S. C. §103(a). If one were to consider the teachings of the entire reference, one would not arrive

at the present invention as recited in the claims; i. e., a cured powder coating composition which undergoes less than 10 percent gloss reduction (claims 42 and 43) or even gloss improvement (claim 44) after 500 hours of QUV exposure. In addition to the arguments presented above with respect to claims 1, 6, 15-17, 19, 20, 22-24, 29-32, 34, 35, 39, 45, 50, 53, 54, 57, and 58, Appellants note that Christie neither teaches nor suggests a cured powder composition of the type presently claimed, wherein the coating undergoes less than 10 percent gloss reduction or gloss improvement after 500 hours of QUV exposure. In the composition of the present invention, the resin and particles are carefully selected to maintain gloss properties and other appearance properties. Christie does not recognize the importance or possibility of maintaining gloss of a coating composition while also improving the mar resistance thereof. As noted above, there is no appreciation in the Christie reference for the performance and appearance requirements of the coating compositions presently claimed. The reference offers no guidance on the selection of resins or particles suitable for use in a powder coating composition such that the coating undergoes less than 10 percent gloss reduction or gloss improvement after 500 hours of QUV exposure. Therefore, one skilled in the art would not assume that the composition of Christie would inherently possess or could be modified to possess the properties of the present invention, as asserted by the Examiner.

**2. The rejection of claims 41 and 59-63 under 35 U. S. C. §103(a) as obvious over Christie (U. S. 6,203,906) in view of Harashima (U. S. 6,362,267).**

Claims 41 and 59-63 were rejected under 35 U. S. C. §103(a) as allegedly being obvious over Christie (U. S. 6,203,906) in view of Harashima (U. S. 6,362,267). The Examiner relies on Christie as above. In the Office Action dated February 13, 2006, the Examiner concedes that Christie does not specify that alumina can be extruded with all of the ingredients of the coating composition,

showing addition only after extrusion. The Examiner relies on Harashima for a teaching of making powder coatings in which all the ingredients are extruded together or in which the filler can be added later. The Examiner concludes that it would have been obvious to one skilled in the art to extrude the alumina with the resin in the coating of Christie per the teachings of Harashima because it would enable better mixing and more even particle sizes for the powder.

Appellants respectfully disagree with the Examiner's rejection and conclusions with respect to claims 41 and 59-63. Appellants submit that the basis on which the claims were rejected is not a valid rejection under 35 U. S. C. §103(a). If one were to combine the whole teachings of Christie with the whole teaching of the Harashima reference, one would not arrive at the present invention as claimed; i. e., a powder coating composition comprising a film-forming resin; and a plurality of particles having an average particle size between 1 and 15 microns dispersed in said resin, wherein the composition is prepared by extruding together the film-forming resin and the particles, wherein the particles have a hardness sufficient to impart greater mar and/or scratch resistance as compared to no particle being present, and wherein the difference between the refractive index of the resin and the refractive index of the particles is less than one.

Christie is deficient in teaching or suggesting the powder coating composition of the present invention for all the reasons discussed above, and is further deficient, as noted by the Examiner, by not specifying that alumina can be extruded with all of the ingredients of the coating composition. Harashima is drawn to a powder coating composition used to coat a molded product having wrinkles, cavities, and the like in its surface. The composition comprises one or more resins and at least two particulate fillers. However, the Harashima reference does nothing to overcome the deficiencies of Christie in teaching or suggesting the present invention. Neither reference, taken alone or in combination, teaches or suggests a powder coating composition as recited in the present claims.

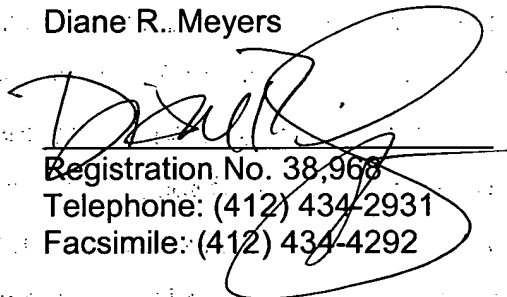
Regarding present claim 41, drawn to a method of preparing a powder coating, again, neither reference teaches or suggests the powder coating composition of the present invention. Therefore, neither reference teaches or suggests a method of preparing the powder coating composition of the present invention.

Based on the above, Appellants respectfully request that the Board reverse the Examiner on the rejection of claims 1, 6, 10-12, 15-17, 19-24, 26-40, 42-45, and 50-58 under 35 U. S. C. §103(a) as obvious over Christie (U. S. 6,203,906) and allow the claims.

Appellants also respectfully request that the Board reverse the Examiner on the rejection of claims 41 and 59-63 under 35 U. S. C. §103(a) as obvious over Christie (U. S. 6,203,906) in view of Harashima (U. S. 6,362,267) and allow claims 41 and 59-63.

Respectfully submitted,

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## CLAIM APPENDIX

Following is a list of the claims (1, 6, 10-12, 15-17, 19-24, 26-45, and 50-63) currently on appeal:

1. A powder coating composition comprising:
  - a film-forming resin; and
  - a plurality of particles having an average particle size between 1 and 15 microns dispersed in said resin, wherein the particles have a hardness sufficient to impart greater mar and/or scratch resistance as compared to no particle being present, and wherein the difference between the refractive index of the resin and the refractive index of the particles is less than one.
6. The coating of Claim 1, wherein said particles are inorganic.
10. The coating of Claim 6, wherein said inorganic particles are uncalcined alumina.
11. The coating of Claim 6, wherein said inorganic particles are calcined unground alumina having a median crystallite size less than 5.5 microns.
12. The coating of Claim 6, wherein said inorganic particles are calcined ground alumina having a median particle size of less than 3 microns.
15. The coating of Claim 1, wherein the film-forming resin comprises at least one reactive functional group containing polymer and at least one curing agent having functional groups reactive with the functional group of the polymer.
16. The coating of Claim 15, wherein the polymer is selected from acrylic polymers, polyester polymers, polyurethane polymers, and polyether polymers.

17. The coating composition of Claim 16, wherein the polymer comprises reactive functional groups selected from epoxy groups, carboxylic acid groups, hydroxyl groups, isocyanate groups, amide groups, carbamate groups, carboxylate groups and mixtures thereof.

19. The coating of Claim 1, wherein the average particle size ranges between 1 and 10 microns.

20. The coating of Claim 19, wherein the average particle size ranges between 3 and 6 microns.

21. The coating of Claim 1, wherein the average particle size is less than 3 microns.

22. The coating of Claim 1, wherein the average Mohs hardness of the particles is 4.5 or greater.

23. The coating of Claim 22, wherein the average Mohs hardness is 5 or greater.

24. The coating of Claim 23, wherein the average Mohs hardness is 8 or greater.

26. The coating of Claim 1, wherein said particles are spherical.

27. The coating of Claim 1, wherein said particles are nonuniform.

28. The coating of Claim 1, wherein said particles are platy.

29. The coating of Claim 1, wherein said particles are calcined.
30. The coating of Claim 1, wherein the weight percent of the particles is between 0.1 and 20.
31. The coating of Claim 30, wherein the weight percent is between 0.1 and 10.
32. The coating of Claim 30, wherein the weight percent is between 0.1 and 8.
33. The coating of Claim 1, wherein the weight percent of the particles is greater than 5.
34. A substrate coated with the coating of Claim 1.
35. The substrate of Claim 34, wherein said substrate is metallic.
36. The substrate of Claim 34, wherein said substrate is polymeric.
37. The substrate of Claim 34, wherein one or more additional layers are disposed between the substrate and the coating.
38. The substrate of Claim 34, wherein the coating is between 0.1 and 10 mils thick.

39. A method for improving the scratch and/or mar resistance of a substrate comprising applying to at least a portion of the substrate the coating of Claim 1.

40. The method of Claim 39, wherein an intervening layer is applied to the substrate prior to application of the coating.

41. A method for preparing a powder coating comprising the step of extruding together a film-forming resin and a plurality of particles, wherein the particles have a hardness sufficient to impart greater mar and/or scratch resistance to the coating as compared to no particle being present, and wherein the difference between the refractive index of the resin and the refractive index of the particles is less than one.

42. A cured powder coating comprising a film-forming resin having a plurality of particles with an average particle size between 1 and 15 microns dispersed therein, wherein the particles have a hardness sufficient to impart greater mar and/or scratch resistance as compared to no particle being present, wherein the cured powder coating undergoes less than 10 percent gloss reduction after 500 hours of QUV exposure, and wherein the difference between the refractive index of the resin and the refractive index of the particles is less than one.

43. The coating of Claim 42 having less than 5 percent gloss reduction after 500 hours of QUV exposure.

44. The coating of Claim 42, wherein the gloss reduction improves after QUV exposure.

45. The coating of Claim 1, wherein said particles are heat treated prior to being dispersed in said resin.

50. The coating of Claim 1, wherein the average particle size is less than 10 microns.

51. A curable powder coating comprising:  
a film-forming resin comprising at least one polymer having at least one reactive functional group and at least one curing agent having at least one functional group reactive with the functional group of the polymer; and  
alumina particles having an average particle size of less than 3 microns dispersed in said resin in an amount of 0.1 to less than 5 percent by weight.

52. The coating of Claim 51, wherein the difference between the refractive index of the resin and the refractive index of the particles is less than one.

53. The coating of Claim 6, wherein said inorganic particles are tabular alumina.

54. The coating of Claim 6, wherein said inorganic particles are calcined alumina.

55. The coating of Claim 53, wherein said alumina has an average particle size less than 3 microns.

56. The coating of Claim 54, wherein said alumina has an average particle size less than 3 microns.

57. The coating of Claim 55, wherein the weight percent of said alumina is less than 5 weight percent, based upon the weight of the coating.

58. The coating of Claim 56, wherein the weight percent of said alumina is less than 5 weight percent, based upon the weight of the coating.

59. A powder coating composition comprising:  
a film-forming resin; and  
a plurality of particles having an average particle size between 1 and 15 microns dispersed in said resin, wherein the composition is prepared by extruding together the film-forming resin and the particles, wherein the particles have a hardness sufficient to impart greater mar and/or scratch resistance as compared to no particle being present, and wherein the difference between the refractive index of the resin and the refractive index of the particles is less than one.

60. The coating composition of claim 59, wherein the particles are alumina particles.

61. The coating composition of Claim 59, wherein the film-forming resin comprises at least one reactive functional group containing polymer and at least one curing agent having functional groups reactive with the functional group of the polymer.

62. The coating composition of Claim 61, wherein the polymer is selected from acrylic polymers, polyester polymers, polyurethane polymers, and polyether polymers.

63. The coating composition of Claim 61, wherein the polymer comprises reactive functional groups selected from epoxy groups, carboxylic acid groups, hydroxyl groups, isocyanate groups, amide groups, carbamate groups, carboxylate groups and mixtures thereof.

## EVIDENCE APPENDIX

Not Applicable

RELATED PROCEEDINGS APPENDIX

Not Applicable